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Notes and News

Mr. G. P. Van Eseltine has published a study of the species of *Selaginella* allied to *S. rupestris* and occurring in the southeastern United States—that is, the region covered by Small's Flora, extending from the southern boundary of Virginia to Florida and west to the 100th meridian.¹ He recognizes eight apparently well-distinguished species. Most of them are local and of restricted range and, until recently, have been only scantily collected—facts which may help to explain why plants so different as these in appearance as well as in minute characters were for many years allowed to pass as belonging to a single species.

Each species is illustrated by half-tone plates from photographs which show excellently its habit and whatever else photographs can show, and also by line drawings of enlarged details. These are faithful and apparently exact in their representation of essential characters, but obscure rather than emphasize these characters by over-use of coarse shading.

At the semi-centennial of the Torrey Botanical Club in 1917, Dr. J. K. Small presented a brief general paper on the ferns of tropical Florida which, he then stated, was to serve later as an introduction to a more detailed treatment. This has now been published in a little book of 90 pages—a book which any lover of ferns who visits southern Florida will do well to take with him.²

The preface, containing the substance of the semi-centennial paper, gives a brief but excellent account

¹ Van Eseltine, G. P. The allies of *Selaginella rupestris* in the southeastern United States. Cont. U. S. Nat. Herb. 20: 159–172, pls. 15–22, figs. 63–70. 1918.

² Small, J. K. Ferns of Tropical Florida. New York: published by the author. Pp. x, 80, pls. 1–5, 51 text figs. 1918. The introduction, as given at the semi-centennial, was published separately in the Amer. Mus. Journ. 18: 126–134. Feb., 1918.

of the physical and geological features of the region covered. There follow descriptions of the 51 species known to occur there, with a text illustration of each and notes as to their habitat, date of discovery in Florida and range elsewhere. There are also five half-tone plates from photographs by the author, showing certain species of ferns in situ.

Tropical Florida, as limited by Dr. Small, includes only the two groups of limestone and coral islands known as Keys—one situated in the southeastern part of the Everglades, the other off the coast. Their combined area is a very small portion of that of Florida as a whole, and the variety of soil and other physical conditions which they present is slight, yet they "harbor more than fifty per cent. of the fern flora of Florida." Of the 51 species recorded (46 of true ferns and 5 of fern-allies) only four—*Osmunda regalis*, *Anchistea virginica*, *Dryopteris Thelypteris* and *Lycopodium adpressum*—appear in northern floras. The rest are species of tropical America, in a very few cases peculiar to this region, and in all occurring in the United States only in Florida.

The text illustrations by Miss Mary E. Eaton deserve more than a word of praise. In spite of their small size, they are excellently clear; and they are both life-like and accurate. Sometimes, one suspects, they are almost too accurate for the author's comfort—as where the precisely similar venation of *Campyloneuron angustifolium* and *Phymatodes exiguum*, as figured, leaves only habitual characters to separate these two genera and casts obvious doubt on their validity.

Ever since D. C. Eaton's time, various botanists have, on different occasions, expressed their dissatisfaction with the current classification of the lip-ferns of the southwestern United States, commonly referred

to *Cheilanthes myriophylla* and to *C. Fendleri*. Mr. Maxon has now dealt with the question thus raised; and, by attention to certain characters, chiefly of scales, rootstock and hairs, which were mostly overlooked or misunderstood by earlier botanists, he has produced a clear and logical treatment of this hitherto confused group, which accounts satisfactorily for all of the material now at hand.³ He finds that true *C. myriophylla*, a species originally described from South America, does not occur in the United States; but that we have four species, two of them hitherto undescribed. They are: a plant related to *C. Clevelandii*, common in California and extending into Nevada and Arizona, which is now named *C. Covillei* and in which one subspecies, *C. Covillei intertexta*, is recognized; *C. Fendleri*, of Texas, Colorado, New Mexico and Arizona; *C. Wootoni*, of New Mexico and Arizona, similar in habit to the last, but distinguished by the ciliate scales of the under surface of the frond; and *C. villosa* Davenp., of Texas, New Mexico, Arizona and adjacent Mexico, the only one of the four which is closely related to *C. myriophylla*.

Present-day intensive study is rapidly reducing the number of reputedly cosmopolitan species and even of those which have been assigned a wide and discontinuous range in more than one continent. This result is due, not so much to finer-drawn conceptions of species as to the growing use in classification of certain characters of scales, pubescence and structure of indusium which were very generally neglected by the earlier writers on ferns, but which, when tested with the large number of specimens now available, have proved to be among the most reliable and satisfactory

³ Maxon, W. R. The lip ferns of the southwestern United States related to *Cheilanthes myriophylla*. Proc. Biol. Soc. Washington 31: 139-152. Nov. 29, 1918.

means of distinguishing species. And the resultant breaking-up of too widely spread and heterogeneous groups is adding much to our knowledge of the real laws of plant distribution.

The latest American fern to be separated from the European species with which it had long been associated, is the local *Polystichum* of California, hitherto referred to *P. aculeatum*. This, Mr. Maxon finds after a study of abundant material, differs constantly from the European plant in its "invariably oblique, less strongly auricled and more copiously filiform-paleaceous pinnules and by its fimbriate-ciliate indusia." It must, he concludes, be considered a separate species and he names it *Polystichum Dudleyi*, in honor of the late Prof. W. R. Dudley.⁴

Prof. E. W. Berry has discussed a fossil fern, *Clathropteris platyphylla*, which, if his tentative restoration of it is correct, possessed a most peculiar habit. The main rachis, as pictured by him, divides into two branches which diverge at a wide angle. Each branch bears near the base from ten to thirty lanceolate pinnae, all on one side, in a fashion irresistably suggesting the feathers on the leg of a chicken. Above these pinnae the branches are naked for a space and then carry out the chicken analogy by producing at the end a palmately arranged cluster of pinnae which does very well for the foot.

Prof. Berry discusses interestingly the relationships of the genus *Clathropteris*. In the form of its pinnae and its, for the most part, regularly reticulate venation it is very like the present genus *Drynaria*, though it seems actually not to be related to it, but to represent the ancestral type of *Dipteris*.⁵

⁴ Maxon, W. R. A new *Polystichum* from California. Journ. Washington Acad. Sci. 8: 620-622. Nov. 19, 1918.

⁵ Berry, E. W. Notes on the fern genus *Clathropteris*. Bull. Torrey Bot. Club 45: 279-285, figs. 1 and 2. July, 1918.

Elizabeth Wuist Brown describes an experiment undertaken to see if regeneration (that is, the replacing of destroyed organs by the living plant) could be brought about in a fern—it having been reported by a previous investigator that this was possible with the young, but not the mature, leaves of certain ferns.⁶ The species chosen for the experiment was *Phegopteris polypodioides*. Spores were sown and when the young plants began to develop, leaves were cut from them and placed on sand wet with a nutrient solution and kept constantly in a damp atmosphere. Out of a large number of leaves so treated, one case of regeneration was obtained. In this instance, the petiole of the young leaf produced two cellular structures similar to prothallia. These bore no sexual organs, but presently put forth rhizoids and young leaves very similar to those produced by the prothallia of this species under normal conditions.

The author draws no particular conclusions from this single case, except that the possibility of regeneration and to some degree its extent and direction, are dependent on the nutriment available for the plant.

Dr. W. N. Steil has described a method of staining fern antherozoids so as to show their structure, which should be interesting to those engaged in microscopical study.⁷

C. A. W.

ADIANTUM CAPILLUS-VENERIS L. forma **cristatum** f. nov. Differing from the species in having the tips of the fronds more or less dichotomously forking and crested. Eaton Canyon, San Gabriel Mts., Los Angeles County, Cal., September 3, 1917. Geo. L. Moxley,

⁶ Brown, Elizabeth Wuist. Regeneration in *Phegopteris polypodioides*. Bull. Torrey Bot. Club 45: 391-397, fig. 1. Oct., 1918.

⁷ Steil, W. N. A method for staining antherozoids of ferns. Bot. Gaz. 65: 562-563, fig. 1. June 18, 1918.

628a. While this form is not at all common, I found some dozen or fifteen fronds in the course of a half hour's search, growing with the species.

GEO. L. MOXLEY.

On June 30, 1918, while climbing Mt. Cushman in the town of Rochester, Vermont, I came across plants of *Aspidium Filix-mas* (L.) Sw. at an elevation of about 2400 feet. These plants were along an old roadway which leads from the Randolph divide road to the bare part of the summit of Cushman. But a few rods away was growing *Aspidium spinulosum* var. *dilatatum* (Hoffm.) Hook. forma *anadenium* Robinson.

The Filix-mas was growing in partial shade.

H. G. RUGG.

American Fern Society

Mr. Raynal Dodge, known to the fern students as the discoverer of *Dryopteris simulata* and of the hybrid character of *D. cristata* \times *marginalis*, died at his home in Newburyport, Mass., October 21, 1918.

Mr. Dodge was born in Newburyport September 9, 1844. He served in the Civil War, enlisting, at the age of eighteen, in a Massachusetts regiment and serving in the expedition to New Orleans and at the siege of Port Hudson. For many years he had been employed as a machinist in a comb factory at Newburyport, and had shown no little ability in designing and constructing mechanical devices.

Mr. Dodge's interest in natural history was life-long. Even during his military service he devoted such time as he could command to observations on the flora and fauna of Louisiana. On his return home he set earnestly to work to prepare himself for serious scientific study. With little